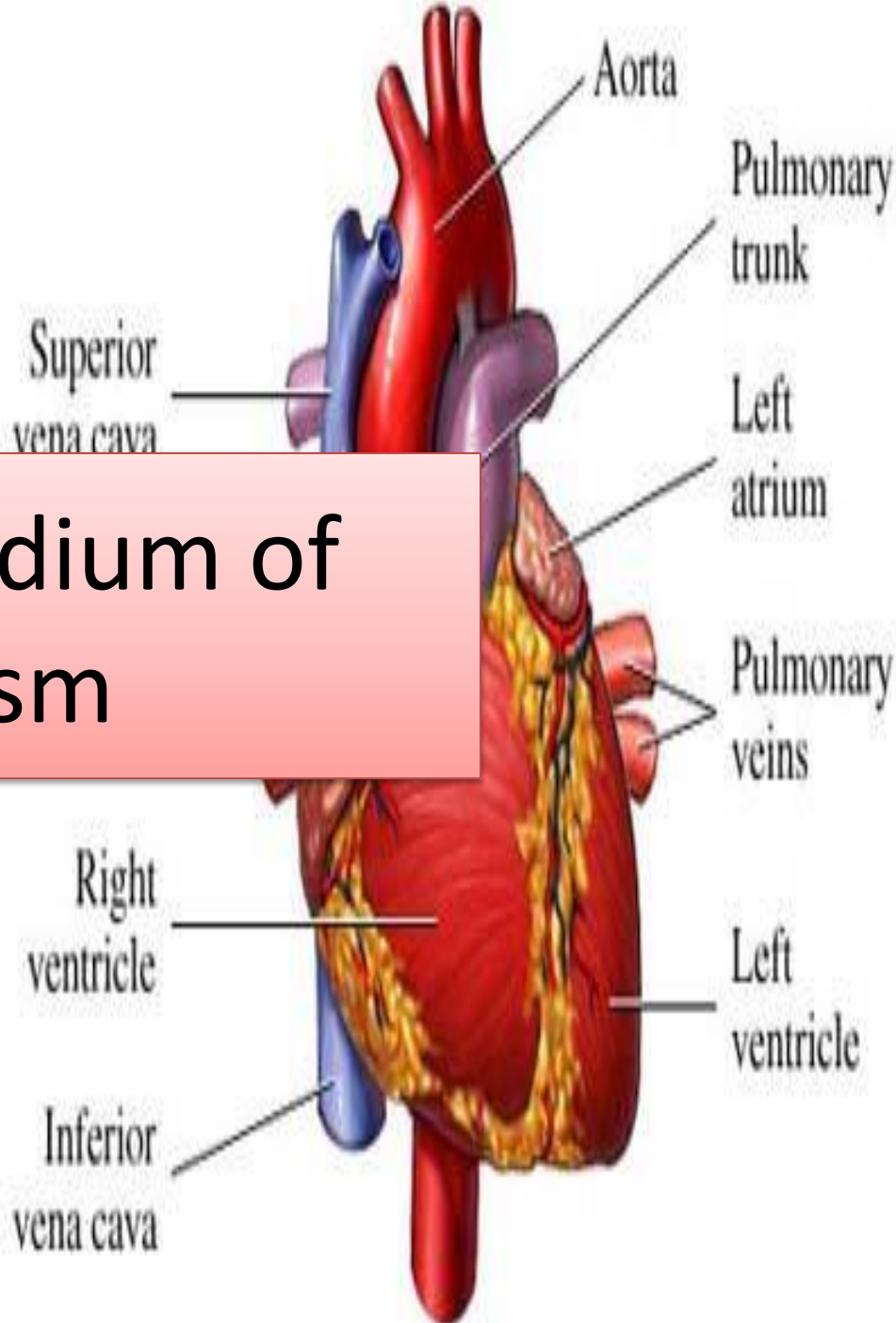


Internal medium of organism



You will:

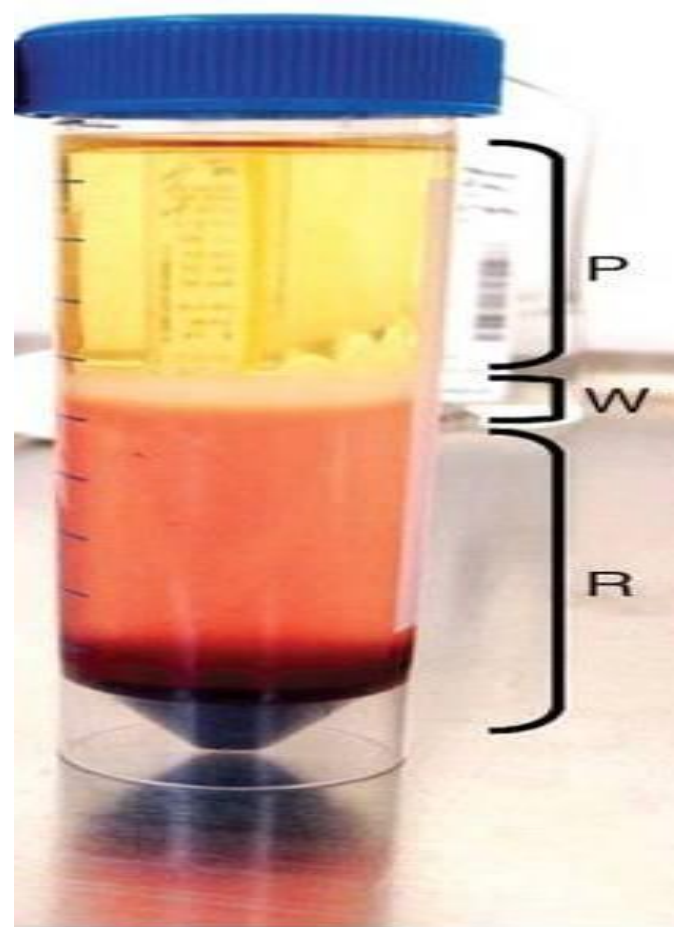
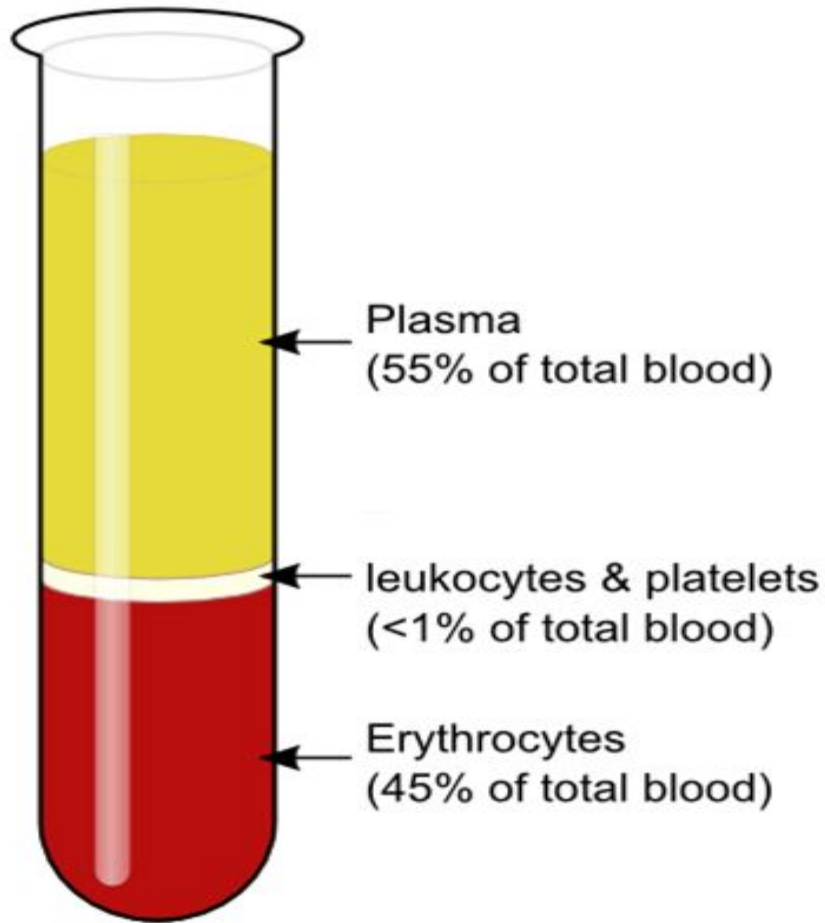
- describe the lymphatic system and the relationship between the blood and tissue fluid and lymph.***

Key terms

- **Lymph** – fluid that circulates through lymphatic system;
- **Lymphatic system** – network of tissues and organs that help the body to get rid of toxins, waste and other unwanted materials;
- **Tissue fluid** – fluid between cells;
- **Blood** - a body fluid which delivers needed substances to organs;
- **Plasma** – the liquid part of blood, which contains water and nutrients.

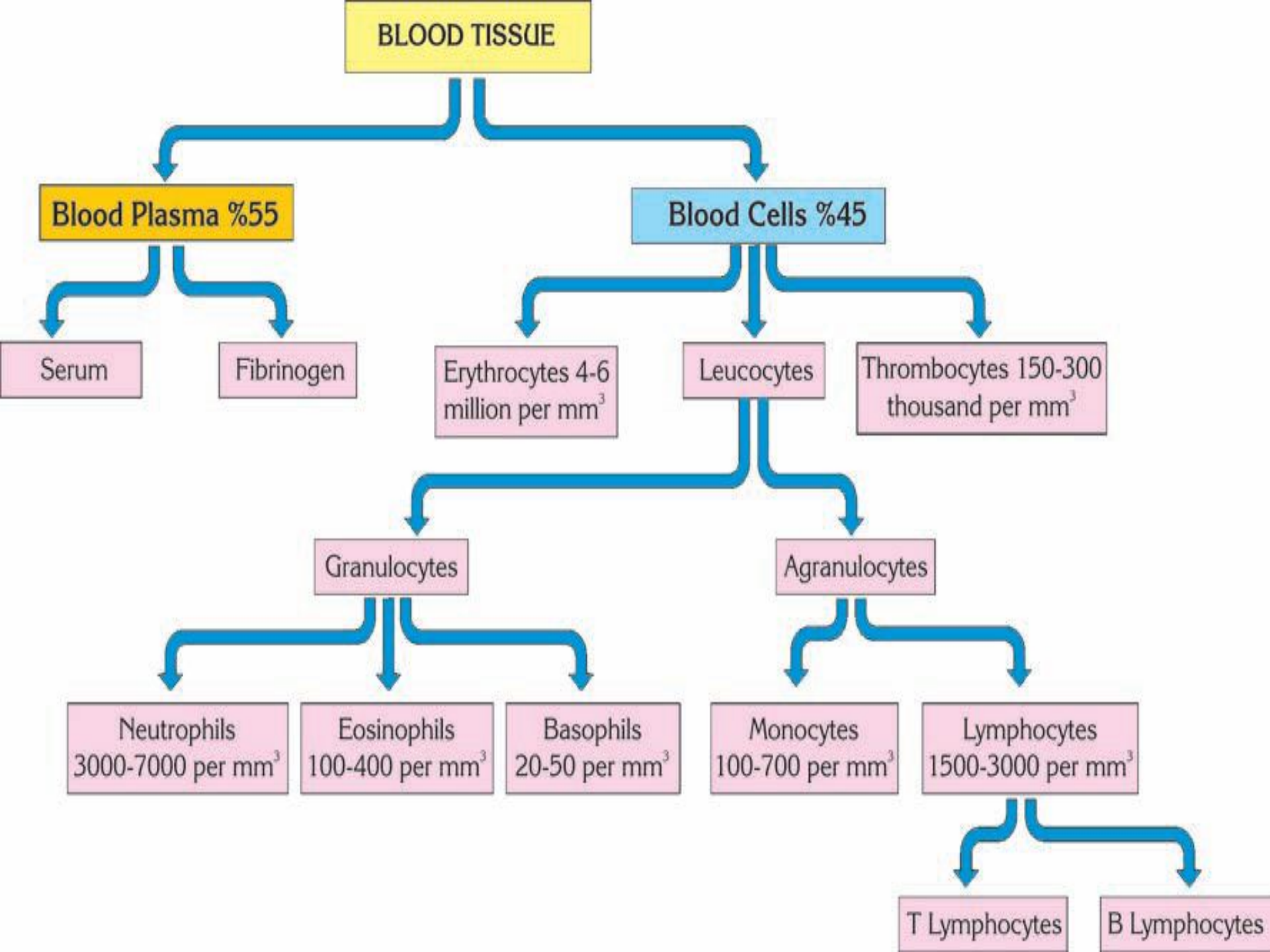
Internal medium (IM) of organism

- **IM** – all the fluids of a human
- It includes blood, lymph, tissue fluid and serebrospinal fluid
- Blood is inside blood vessels and lymph is inside lymphatic vessels
- Tissue fluid is between cells
- Serebrospinal fluid is in CNS



BLOOD

- Blood is a connective tissue
- It consists of 45% blood cells and 55% plasma



Red blood cells



Platelets



White blood cell

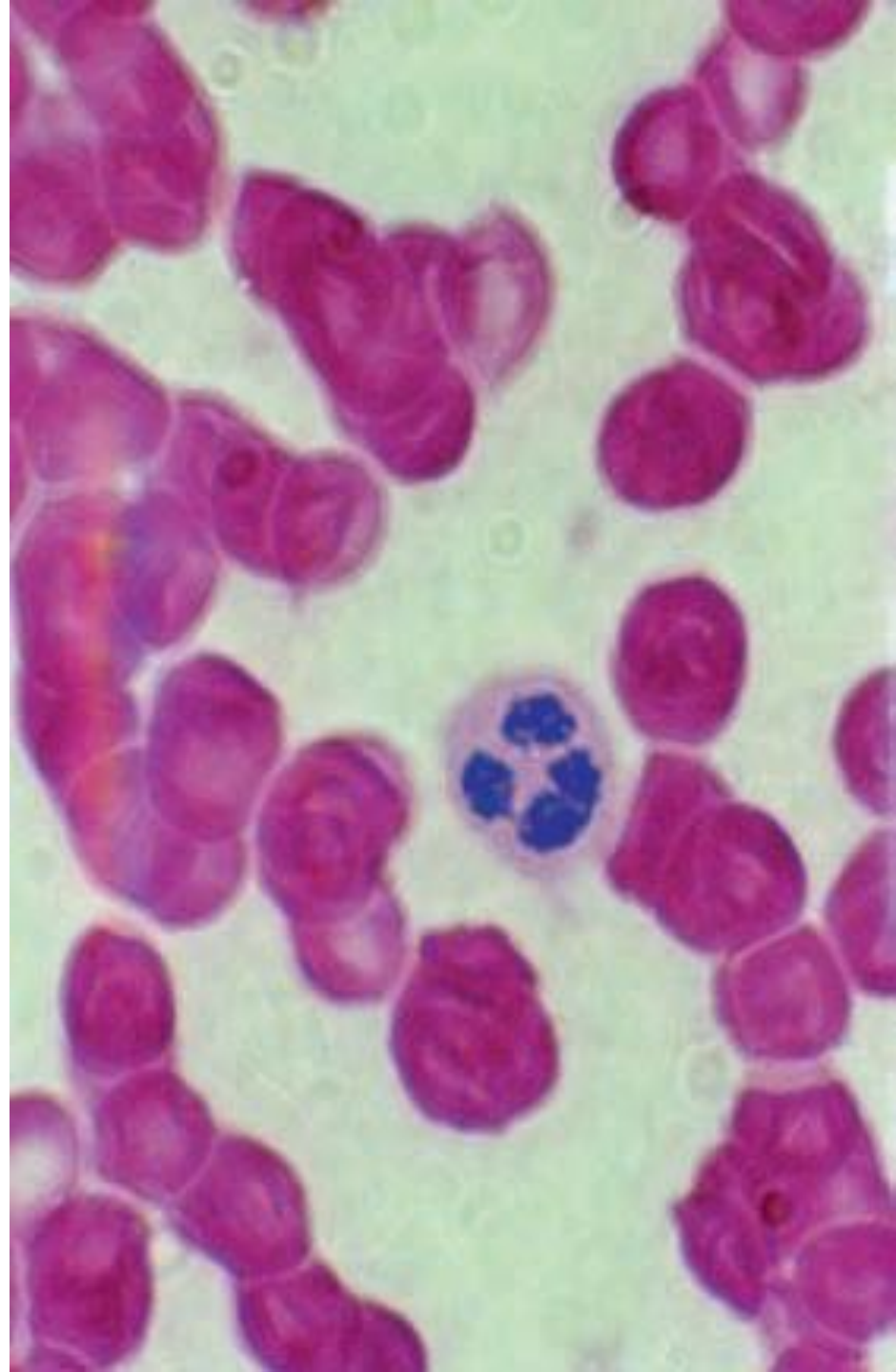


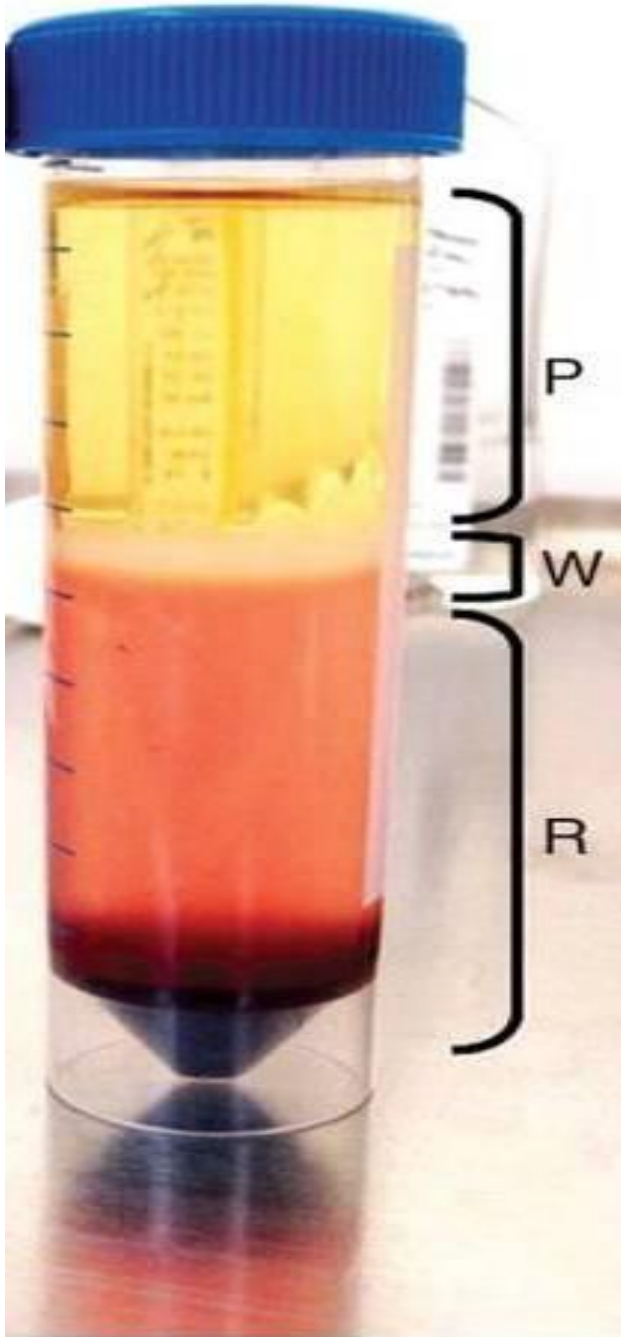
Plasma

Blood vessel

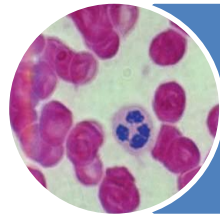
Functions of the Blood

- **Nutrient Transport**
- **Hormone Transport**
- **Homeostasis**
- **Immune response**
- **Clotting**

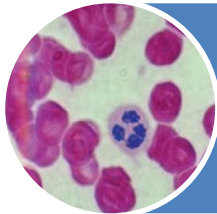




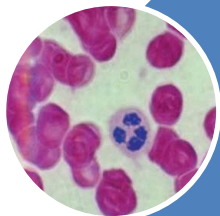
Plasma constitutes 55% of the blood



90-92 % is water



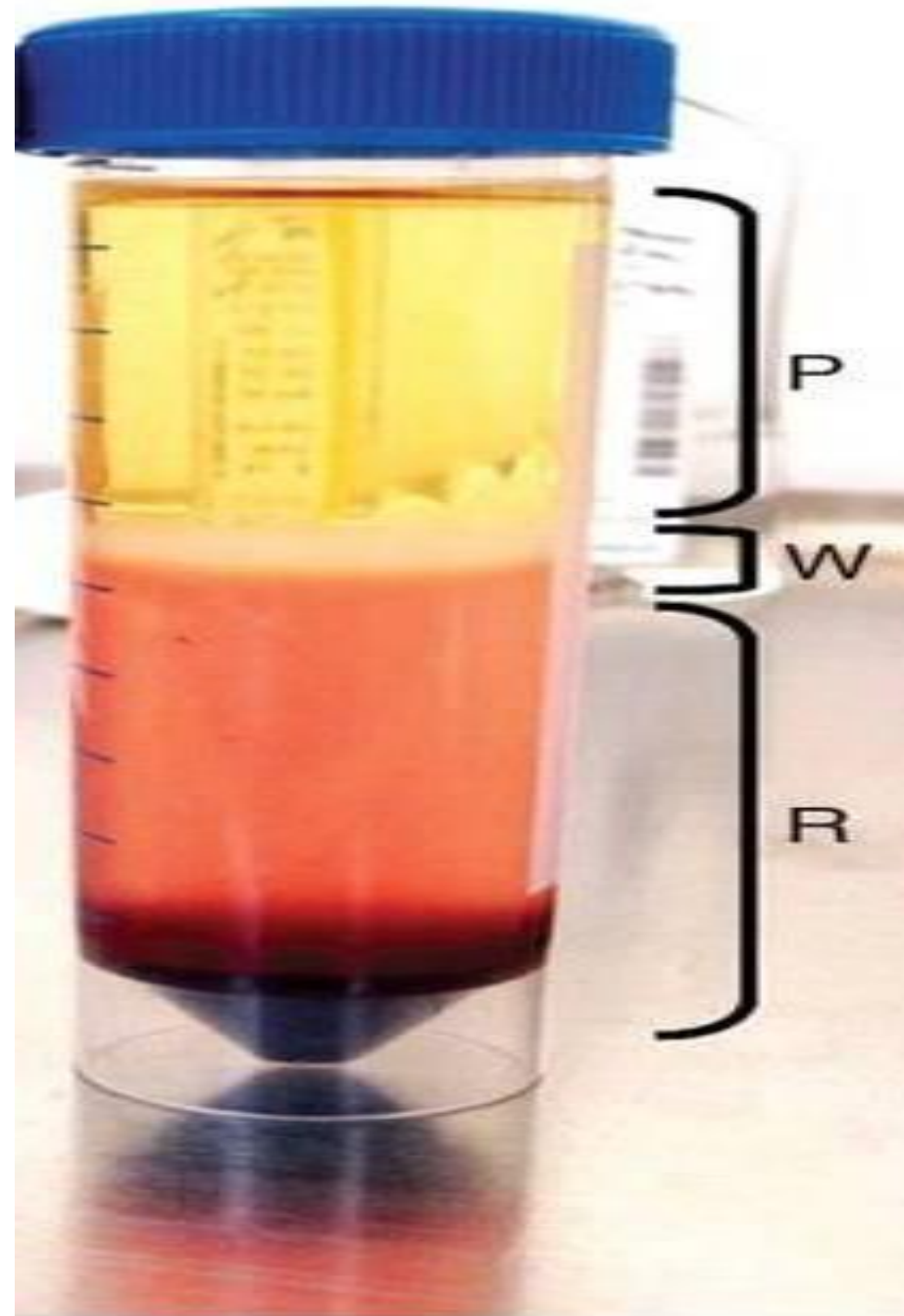
7-9% plasma proteins

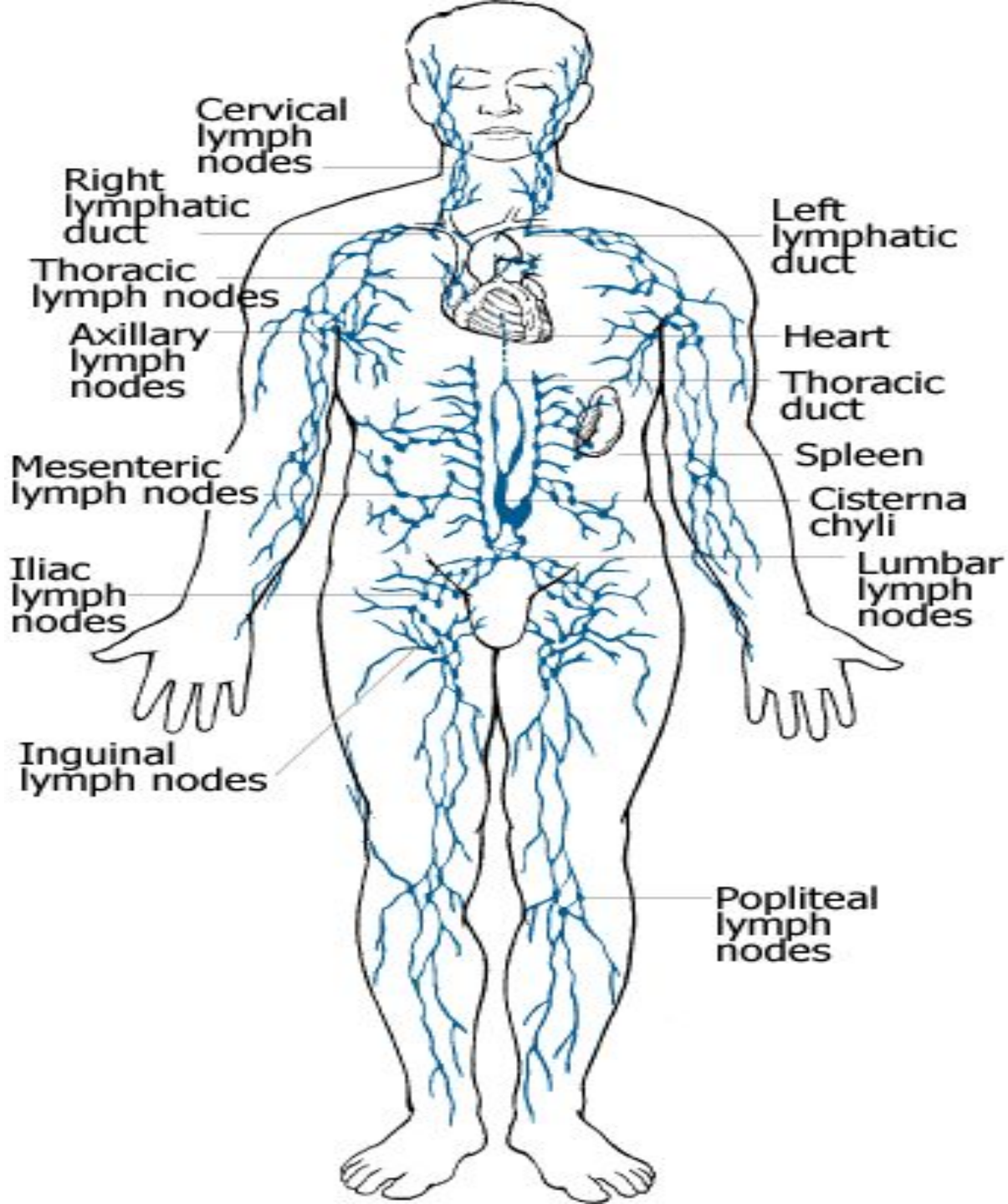


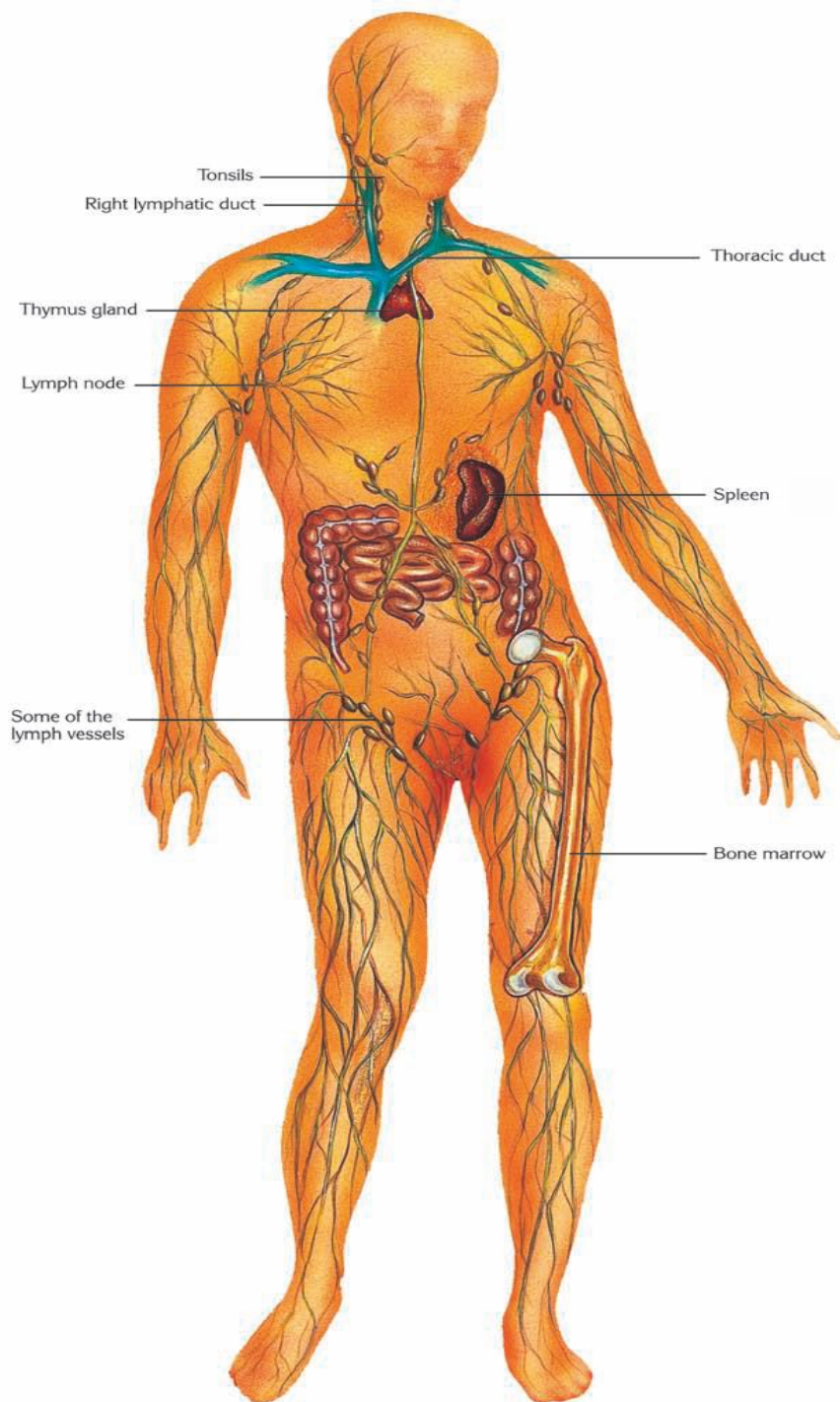
the remaining 1% is amino acids, carbohydrates, lipids, hormones, urea, minerals and other substances

Plasma proteins

- There are more than 70 different types of plasma proteins
- Examples:
- **Fibrinogen** is involved in blood clotting
- **Albumin** regulates water level
- **Globulins** participate in the structure of antibodies and protects body from pathogens





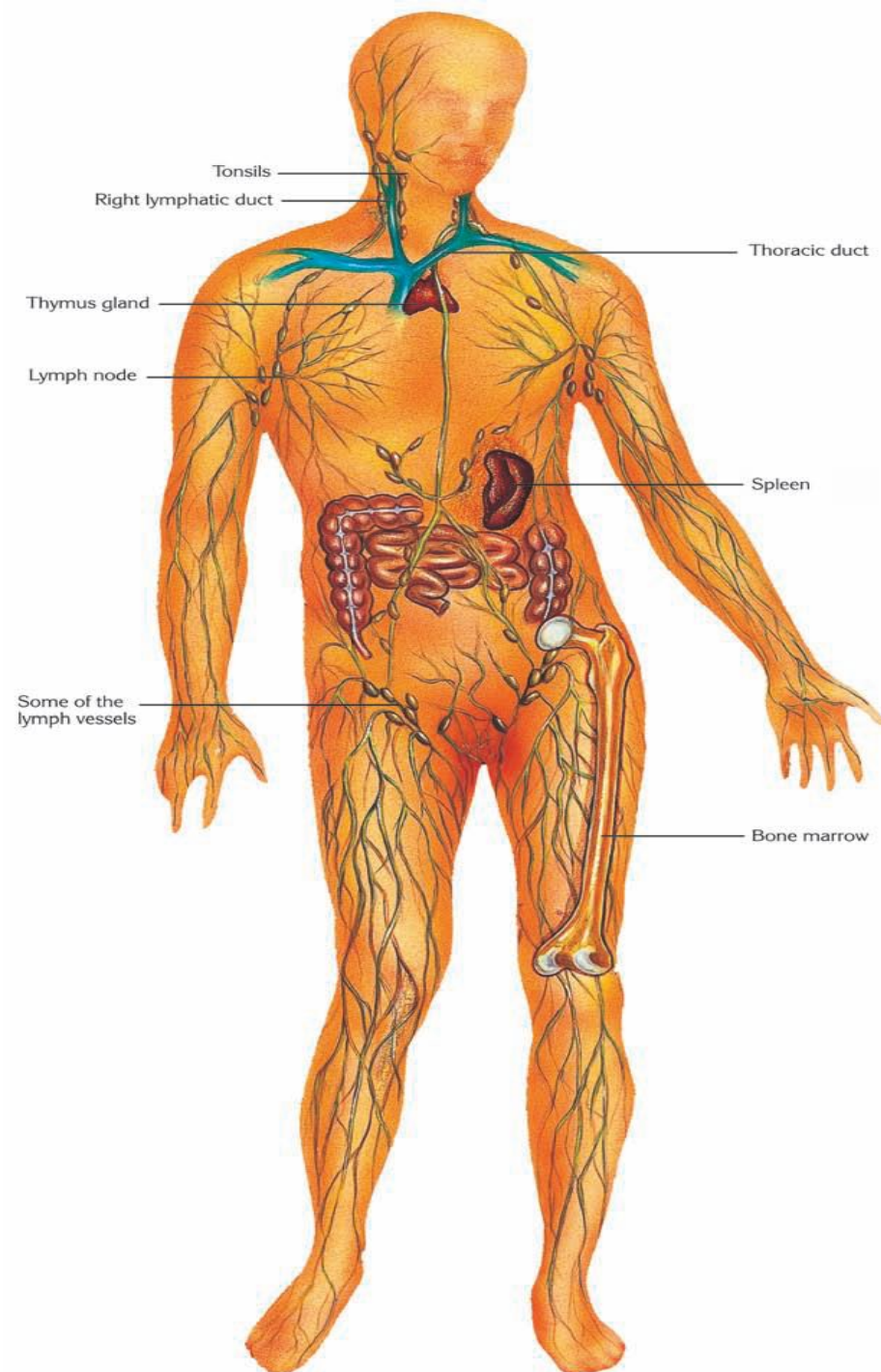


LYMPH

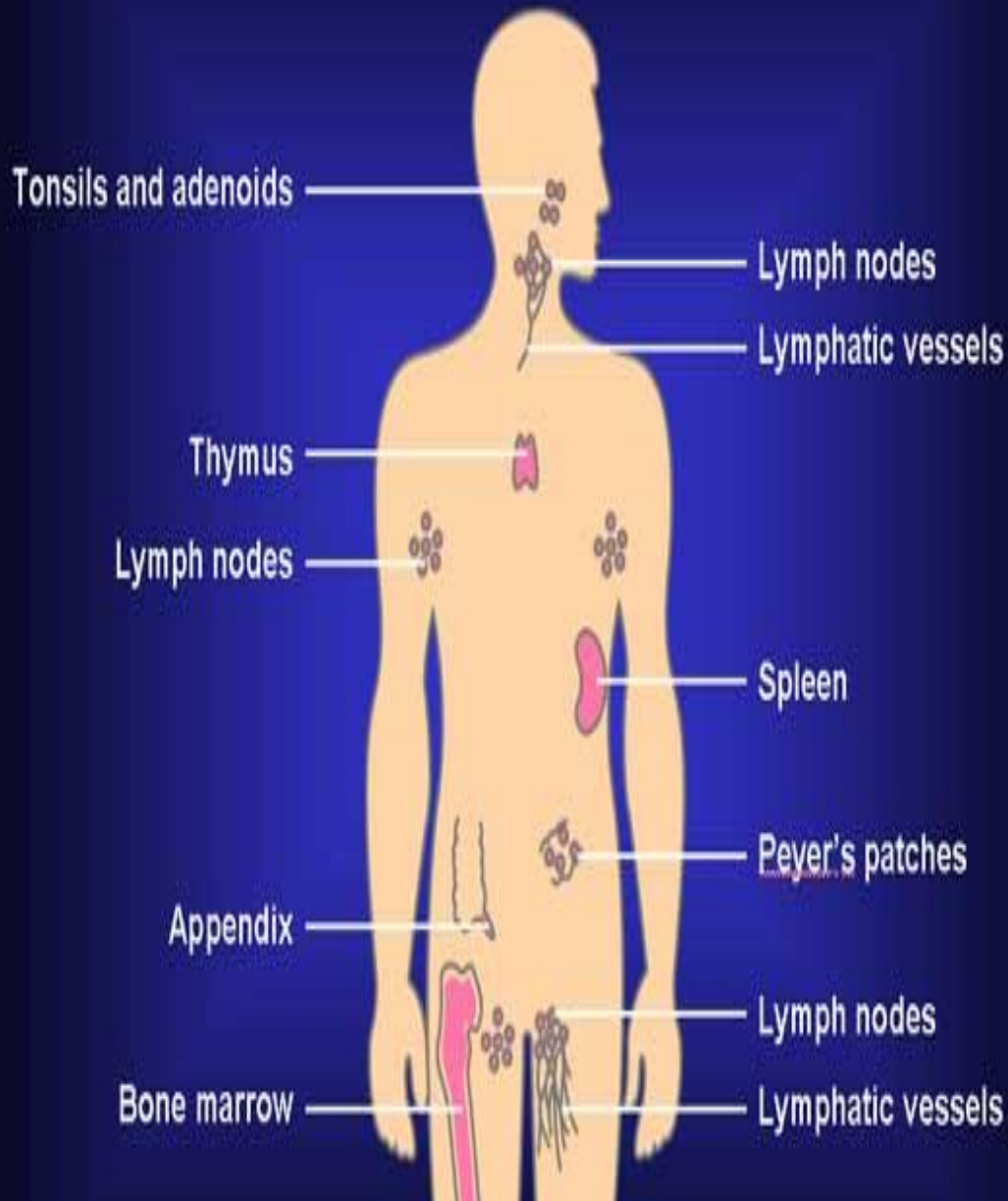
- The fluid that has diffused from blood and has not been reabsorbed by the blood capillaries forms tissue fluid
- Once fluid enters the lymphatic vessels, it is called ***lymph***

Functions of Lymphatic system

- Lymphatic vessels take up excess tissue fluid and return it to the blood stream in VEINS
- Lacteals (lymph vessels), absorb fats at the intestinal villi and transport them to the blood stream
- helps to defend against disease (immunity)



Organs of the Immune System



Lymph nodes

- Lymph nodes are involved in both blood production and body defense by capturing microbes
- In the event of major infection, the lymph nodes can become enlarged

Terminology

English	Russian	Kazakh
Edema	Отёк	Ісіну
Absorbtion	Всасывание, абсорбция	Сіңіру
Lymph	Лимфа	Лимфа
Valve	Клапан	Қалпақша
Backflow	Обратное течение	Кері ағын
Lymph nodes	Лимфа узлы	Лимфа түйіндері
Tonsil	Миндалина	Көмегей безі
Plasma	Плазма	Плазма